

R.M.U. USE ONLY
PROBLEM STATEMENT NO:
DATE OF RECEIPT:



STAGE I RESEARCH PROBLEM STATEMENT

I. PROBLEM TITLE (required): Montana Rest Area Use: Data Acquisition and Estimation

II. PROBLEM STATEMENT (required):

In light of limited financial resources and dramatically reduced buying power, MDT is targeting an asset management approach to future Rest Area investments. The process of choosing locations for new rest areas is very time consuming and costly, yet reusing or rehabilitating existing infrastructure carries with it certain challenges. Information on probable use of rest areas by Montana highway system users including commercial carriers will inform siting and design options.

A key component of rest area decision making centers on the expected use of the facility. Usage bears directly on the capacity of water and sewer systems and the size and design of parking areas. Usage between user types is also an important factor in design for the accommodation of varying vehicle sizes and the mixing of vehicle classes on ramps and within parking areas. While AASHTO provides guidelines for rest area design¹, Montana's extreme rural characteristics do not fit in well with "canned" numbers based on national usage rates generated from a percentage of mainline traffic. For example, MDT has anecdotal evidence that many lesser-traveled routes receive a significantly higher portion of the mainline passersby due to long distances between 24/7 opportunities to stop. Put simply, there are few alternative stopping locations and even our strategically located rural sites are used proportionally above the guideline (percent of mainline) trends used to predict size and usage. For instance, Mosby rest area is miles from the previous and following alternative safety rest locations, and a large percentage of all travelers use this site. On the other hand, the usage still is often low and over-designing a facility is costly.

In addition, a true "asset management" approach to rest area management requires good data so expected life can be predicted as a function of investment levels. Thus, the need for actual data to determine the number of people entering existing facilities and their rate of water usage that supports informed decision-making as regards Montana's rest area program, from siting through long-term facility management. Traffic classifications are also needed to ensure adequate design for long-distance truckers using the facility simultaneously with passenger vehicle drivers.

III. RESEARCH PROPOSED (required):

The goal of this research is to obtain data on rest area usage that can be used to supplement, replace, or confirm national data for purposes of rest area siting, design and management. This data should become the basis of estimation for future rest areas.

Montana-specific rest area usage values will be obtained through data logging devices:

- 1) Water flow meters,
- 2) Door counters, and
- 3) Traffic counters.

In addition, the data will be considered and Montana's overall rest area development effort will be informed by a:

- 4) Literature review and research on rest area placement and sizing in comparable states, and a
- 5) Compilation of comparable states' policies and procedures for rest area site selection, sizing, and management.

This information will also aid in the assessment of existing rest areas, providing statistical evidence of use, which can then be used as another component of rehabilitation or reconstruction prioritization planning.

All existing rest areas may be part of the population from which data is collected. If a sample of rest areas is taken, the sample must include a cross-section of rest areas that displays variance in regional, system, adjacent roadway AADT, and a diversity in regional economic geography and demographics.

¹ AASHTO, "Rest Areas on Major Arterials and Freeways, Guide for Development," 2001.
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IV. IT COMPONENT (required): Identify if the project includes an IT component (purchasing of IT hardware, development of databases, acquisition of existing applications, etc) or not. If so, describe IT component in as much detail as possible.

Existing software will be used to analyze data. The meters to be installed may collect data digitally, but only current software applications will be used for analysis and reporting. There are no expected future IT components associated with this project.

V. URGENCY AND EXPECTED BENEFITS (required):

In light of limited financial resources and dramatically reduced buying power, MDT is targeting an asset management approach to future Rest Area investments. Data on usage is needed to ensure right-sizing of rest area facilities and that the Department has the best information when anticipating cyclical repair and rehabilitation needs. Beginning in FY 2009, MDT will set aside funding annually for rest areas (capital and rehabilitation work), and data is needed as soon as practicable to inform the investment decisions that will be tied to this program. Also, to ensure long-term federal participation, data is needed to demonstrate that timely rehabilitation will extend the life of the federal investment. Data is very limited in Montana on rest area use and national data could result in over estimates of use, thus risking the possible over-investment of scarce funds.

VI. IMPLEMENTATION PLAN (required):

Suggested research steps:

- 1) Complete outline for rest area usage research
- 2) Perform literature review
- 3) Identify states from which comparative information will be obtained
- 4) Survey states
- 5) Summarize literature and state survey results in a preliminary report to technical panel
- 6) Develop a sampling plan for Montana rest area usage (should consider report results from activity #5) :
 - Install water flow meters. The objective is to gain information on water use.
 - Install door counters. The objective is to gain information on number of visitors and then also calculate amount of water used per visitor.
 - Collect classification counts of vehicles on ramps entering/exiting rest areas.

Option 1: Preferred alternative
100% sampling plan

Option 2: Select, statistically significant sampling plan (e.g. 90/10), stratified by system, AADT, and spacing, with consideration given to differences between regional economic geography and demographics.

- 7) Collect data as consistent with sampling plan to begin formulating usage trends including average stay of commercial haulers.
- 8) Develop draft and final report with input from technical panel. Report will include a Montana-specific approach to rest area use estimation.

VII. SUBMITTED BY: (required)

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Note: Submitter may attach continuation sheets if necessary.